RESEARCH DEPARTMENT

VISIT TO SWITZERLAND: MAY 1959

Report No. A-050

(1959/9)

THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

RESEARCH DEPARTMENT

VISIT TO SWITZERLAND: MAY 1959

Report No. A-050

(1959/9)

T Somerville

T. Somerville, B.Sc., M.I.E.E., F.Inst.P. (T. Somerville)

This Report is the property of the British Broadcasting Corporation and may not be reproduced in any form without the written permission of the Corporation.

Report No. A-050

VISIT TO SWITZERLAND: MAY 1959

Section	Title	Page
	SUMMARY	1
1	ELEKTROAKUSTISCHES EXPERIMENTALSTUDIO	1
2	RADIO LUGANO	2
3	RESEARCH LABORATORIES OF P.T.T., BERNE	3
4	REFERENCE	3

June 1959

Report No. A-050

(1959/9)

VISIT TO SWITZERLAND: MAY 1959

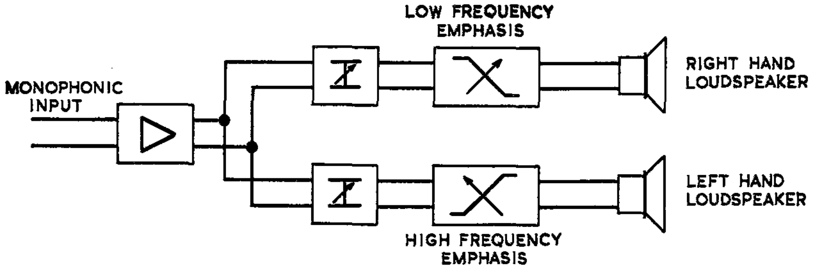
SUMMARY

The object of this visit to Switzerland was to discover whether the developments in stereophony by Professor Scherchen were of interest to the BBC. Favourable comment has been heard about a device, called by him the "Stereophoner", which is reputed to produce stereophonic results from monophonic material. The opportunity was also taken while in Lugano to visit the Italian language broadcasting centre of Switzerland, Radio Lugano, where new premises are at present under construction. On the return journey a short visit was paid to the P.T.T. laboratories in Berne.

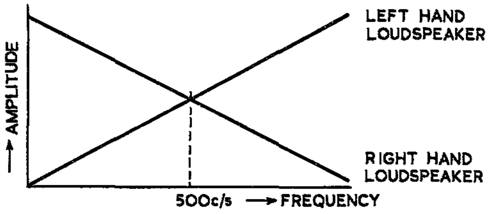
1. ELEKTROAKUSTISCHES EXPERIMENTALSTUDIO

Some years ago Professor Scherchen, the well-known conductor who often visits this country, acquired an old vineyard at Gravesano to the north of Lugano. For a musician, he is unusual in his interest in methods of reproducing sound. He has built himself two studios at Gravesano with the object of experimenting since he believes that it should be possible, by the use of electro-acoustic techniques, to improve on the results obtained in concert halls. For example, he states that if a first-class performance is required he thinks it should be better to employ only one performer of each instrument in the orchestra and use multi-microphone techniques to obtain the results for a full symphony orchestra. Needless to say, he has not achieved this object and it seems extremely doubtful if he ever will.

At present he is mainly interested in the Stereophoner which is a device designed to improve monophonic material such as gramophone records or broadcast programmes. Scherchen explains that in most orchestras the high frequency instruments are on the left, middle frequencies in the centre and low frequencies on the right, although there are frequent exceptions. The object of the Stereophoner is to produce such a spatial frequency distribution from monophonic material. It was not possible to get the full details from him but the arrangement appears to be somewhat as shown in Fig. 1. The equipment consists of two networks, one having a frequency characteristic sloping downwards from high to low frequencies and the other doing the reverse. There are amplitude and slope controls for each of the networks and each feeds one loudspeaker. The crossover is usually in the region of 500 c/s. Hence the apparent position of each note depends on the frequency, as does the position of the instruments. In general the violins will appear on the left with other high frequency instruments such as flute, oboe and clarinet, while double basses will be on the right. For instruments such as the timpani, having basically a low frequency together with considerable high frequency components, the effect can be peculiar, because the tap of the sticks appears from the left and is quite detached from the bass note which is on the right.



BLOCK SCHEMATIC



IDEALIZED EQUALIZER CHARACTERISTICS

Fig. 1

In the demonstrations heard, most of the activity of a full orchestra appeared to come from half left with occasional high frequencies from the extreme left. and the low frequencies from the extreme right. Scherchen maintains that musicians prefer this to monophonic reproduction because it "opens out the score". He is convinced that it is better than stereophony from two loudspeakers which he claims must have nothing in the middle and be lacking in depth. It would appear that he has not heard a demonstration of good stereophony since his own device gives a very poor distribution of the instruments, with many gaps, and less depth than good stereophony. From the demonstrations observed it is concluded that the Stereophoner is of no use to a broadcasting organisation although it has been suggested that some broadcasting authorities, e.g. Radio Genève, intend to use it to radiate stereophonic programmes based on monophonic material. Moreover, the Stereophoner is designed for use with orchestral music and therefore would be useless for drama and most other types of programme. Scherchen claims that he is obtaining a patent although it is difficult to see what feature of this device is patentable.

2. RADIO LUGANO

The Italian language programmes in Switzerland are produced in Radio Lugano. Some years ago, on a previous visit[1] it was discovered that new premises were to be constructed. The opportunity was therefore taken to find out how much progress had been made.

It is surprising to find yet another broadcasting organisation in Europe building new premises primarily designed for sound. The others are in Paris and Stockholm. Six new studios are under construction for this purpose but in addition two television studios are being provided. It is not possible to comment on the characteristics of these studios because the construction is not far advanced. If, however, television develops as rapidly in Switzerland as elsewhere the ratio of six sound studios to two for television will almost certainly prove to be wrong. In the Italian language there is competition from the Italian television station at Milan which puts down a very reasonable signal in Lugano so that the Swiss may be forced to develop their television service more quickly than they would prefer. At present there seems little interest in stereophony as far as the programme organisation of Swiss broadcasting is concerned.

3. RESEARCH LABORATORIES OF P.T.T., BERNE

All the technical development for Swiss broadcasting is carried out by the P.T.T. in Berne. The laboratories which were under the direction of Professor Furrer are now directed by Herr Kaufmann, with whom correspondence frequently takes place. It was principally to meet Herr Kaufmann that the visit to Berne was made.

On the last visit[1] a new non-reverberant room was described about which the opinion was expressed that the wedges were too hard to provide adequate high frequency absorption. It is interesting that this is now confirmed by the users. The principal developments in the field of acoustics are in methods of speeding up measurement. A complicated analyser has been designed to measure the slope of reverberation decays by a Brüel and Kjaer recorder and to indicate averages on message registers. Another new instrument records the percentage of total time that specified levels have been exceeded and is used for programme analysis. Such instruments have been available in Research Department for many years.

On the electro-acoustics side, tests with stereophonic microphones are in progress. An interesting portable recorder, named "Kudeliski", manufactured in Switzerland, was demonstrated. Although tape speed may be varied, fixed speeds of 7½" and 3¾"/sec, controlled by crystals, can be selected. The recorder is about half the weight of the E.M.I. equipment and very much better in construction. Unfortunately it was not possible, in the time available, to hear a demonstration, but the performance was reported to be very good.

4. REFERENCE

1. "Visit to Switzerland", Research Department Report No. A-039, Serial No. 1956/2.

MV